

young tissues, another peculiarity of the genus. There is no general survey of *Chazaliella* pollen, but those species examined so far are invariably colpate (ROBBRECHT, 1988 : fig. 45 C and ined. obs.).

However, the occurrence of distinct bracts and bracteoles, development of the calyx-lobes, and position of the inflorescences is rather exceptional for *Chazaliella*. In the *Psychotrieae* in general, the inflorescences are nearly always terminal on lateral twigs. This position characterizes most genera, but a few (e.g. *Coccochondra*, *Saldinia*) always have axillary inflorescences, paired at the nodes. In other genera, e.g. *Declieuxia*, *Hymenocoleus*, both types of inflorescence are met with. The shift in inflorescence position is apparently easily effected (ROBBRECHT, 1988 : 73) in the *Rubiaceae*. In the African *Psychotrieae*, however, truly axillary inflorescences are extremely rare. The only other case known to me is *Hymenocoleus*. Out of the twelve species, only one, *H. axillaris*, is characterized by an axillary inflorescence position, and a second one, *H. nervopilosus*, has terminal or axillary inflorescences (ROBBRECHT, 1977).

#### THE HIGH DIAGNOSTIC VALUE OF PYRENE CHARACTERS IN THE RUBIACEAE AND IN THE PSYCHOTRIEAE IN PARTICULAR

PETIT's emphasis on fruit characters turned out to be very useful in African *Psychotrieae*. A new genus *Hymenocoleus*, erected subsequent to his work, was confirmed by pyrene characters (ROBBRECHT, 1975), and PETIT's generic concepts were followed in the *Psychotrieae* account in the Flora of tropical East Africa (VERDCOURT, 1976).

The easy attribution of *C. letouzeyi* to *Chazaliella* exemplifies the high taxonomic value of pyrene characters in the *Rubiaceae*. A rapid survey of selected non-African *Psychotrieae* (ROBBRECHT, 1989) convinced me that the wide morphological variation of fruits encountered in the African members of this tribe is equally applicable in the other continents. Thus, the evolutionary scene in the pantropical *Psychotrieae* seems to be one of unattractive, unspecialized, small, white flowers acquiring little morphological variation. Few groups are characterized by distinct floral characters, e.g. *Palicourea* with zygomorphous, strikingly coloured flowers united in apparent inflorescences with coloured axes. Yet one floral biological tendency is common, namely the formation of capitate pseudanthia often supported by a distinct involucre; it has evolved independently many times and certainly cannot serve to define artificial generic concepts such as *Cephaëlis* (SCHNELL, 1960). In contrast to weak floral evolution, *Psychotrieae* exhibit a bewildering fruit diversity, which urgently requires to be examined in order to clarify the supposed difficult generic delimitation within the tribe. Surprisingly, and despite the floral uniformity, the pollen in *Psychotrieae* is more variable than in any other rubiaceae tribe (ROBBRECHT, 1988 : 192). However, this field also remains largely underexplored. A joint palynological and carpological study could thus prove to be most useful in our understanding of the generic concepts in *Psychotrieae*.

It is astonishing that students outside Africa never attempted to apply these fruit characters, which made the generic classification of African *Psychotrieae* revolutionary simple. Recent monographic work on non-African *Psychotrieae* continues to neglect these fruiting characters. While SOHMER's (1987) treatment of *Psychotria* made use of certain pyrene and seed characters, the presence or absence of PGSs is not evident in his descriptions or drawings.

Neither did SMITH & DARWIN (1988) use PGS characters to key out the Fijian genera of the *Psychotrieae*. These were not described, although they are well depicted for *Hedstromia* (*op. cit.* : fig. 99 A, B; pyrenes with 2 long basal marginal PGSs, very similar to those of *Chazaliella*!). TAYLOR (1989) made no mention of the occurrence of PGSs in the pyrene of *Palicourea*; the genus is well characterized by two basal marginal PGSs (ROBBRECHT, 1989).

**Chazaliella letouzeyi** Robbrecht, *sp. nov.* — Fig. 1, 2.

*Species propter habitum saepius monocaulem, folios magnos spatulatos, inflorescentias congestas atque calycis lobos foliaceos in genere insignis, quoad pyrenarum dehiscentiam cum sulcis 2 lateralibus autem nullo dubio ad Chazaliellam pertinens.*

TYPE : *Letouzey 8212*, Cameroun, Mvam (holo-, BR; iso-, BR).

Plants woody, generally single-stemmed and attaining only 1-1.5 m, rarely branched and somewhat taller, 2(-3)m high; twigs quickly becoming corky; leaves crowded at top of the branch(es); vegetative parts glabrous (except on inside of stipules), becoming blackish in the dried state. Leaves sessile, petiole quickly becoming corky; blade spatulate, with acute tip and extreme base rounded, 20-32 × 8-16 cm, with 10-20 secondary veins on each side of the midrib; domatia and bacterial leaf galls absent. Stipules interpetiolar, narrowly triangular, outside glabrous and inside densely covered with brownish hairs. Inflorescences axillary and paired at nodes, each with ca. 15 flowers and few stipule-like bracts between them. Flowers (imperfectly known; only buds and dried up opened corollas observed) 5-merous, sessile, subtended by narrowly triangular, ciliate bracteoles; calyx consisting of a distinct tube ca. 3 mm long crowned by linear, hairy lobes of about the same length; corolla white, with valvate aestivation; tube ca. 5 mm long, with a dense ring of erect hairs in its upper half; lobes ca. 2-3 mm long, with hood-like tip; ovary 2-locular, each cell with one erect ovule; disk cylindrical; anthers sessile, included in upper part of corolla-tube. Pollen grains (only observed in Wodehouse preparation) spherical, ca. 45 μm in diameter, 3-colpate. Drupes first orange, at full maturity red, ellipsoidal, ca. 12-15 × 15-20 mm, crowned by the long persistent calyx, with fleshy mesocarp and endocarp developed into two pyrenes; pyrenes broadly ovoidal in outline, somewhat flattened, ca. 10 × 10 mm, with 5 irregular ribs on the abaxial side, flat but with a minute basal crest at the adaxial side, opening with two long lateral preformed germination slits at the base. Seeds having the shape of the pyrenes (except the adaxial-basal crest); seed-coat pellicle-like, blackish brown, with a distinct central vascular bundle on the adaxial side; exotesta composed of delicate, ± isodiametric parenchyma-like cells without tannins or coloured substances; endosperm whitish, corneous, not ruminant; embryo very small, in a basal embryonal chamber filled with slimy tissue, with inferior radicle.

HABITAT : Rain forest floor.

DISTRIBUTION : Endemic to the Low Guinea Domain of the Guineo-Congolian Region (Fig. 3).

MATERIAL EXAMINED. — CAMEROUN : Mvam, 5 km SO d'Oveng, *Letouzey 8212* (BR); bordure de la rivière Mboua près Minkoumou, 30 km SE de Mvangam, *Letouzey 10071* (BR); près Mevous, 50 km SE

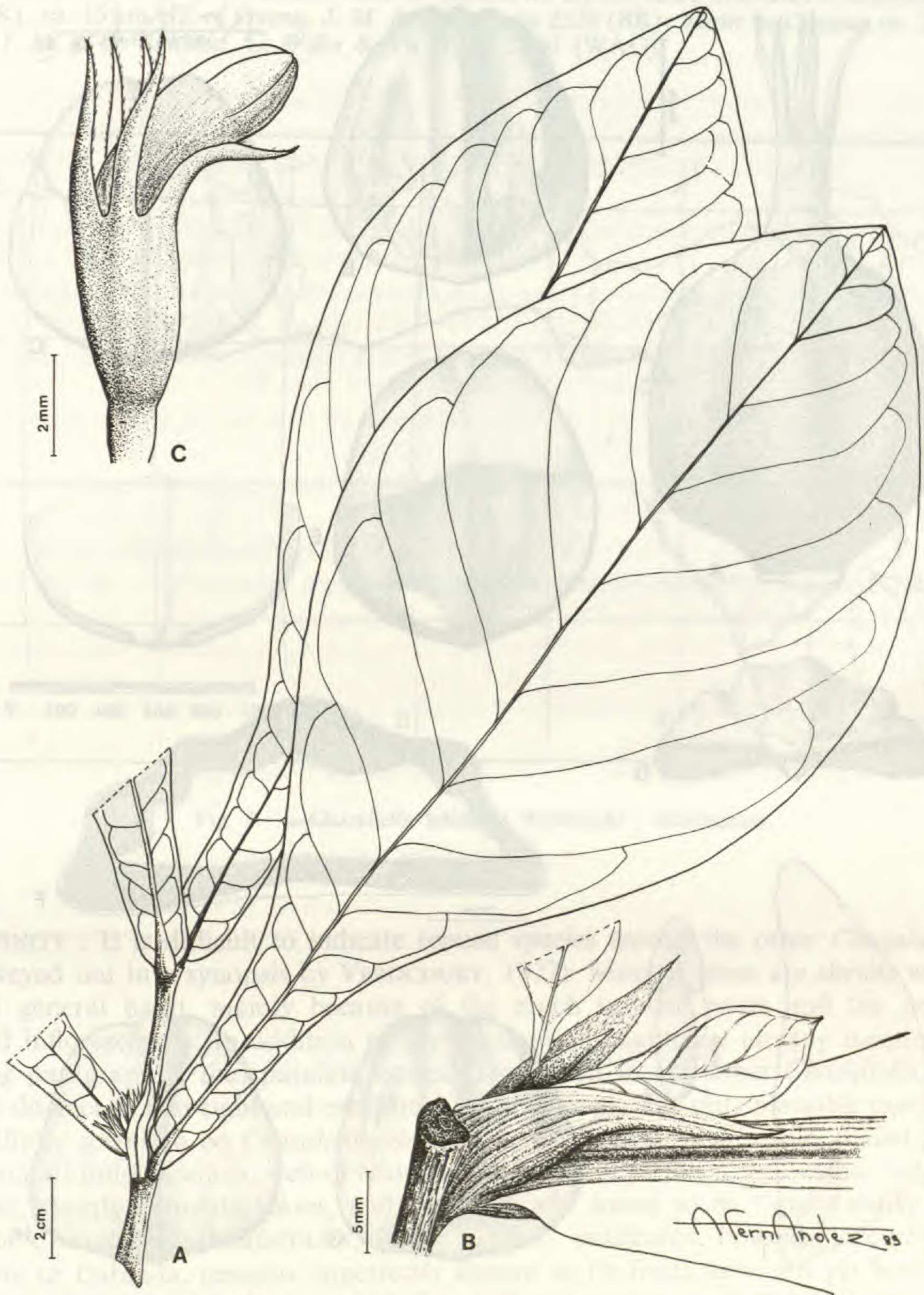


Fig. 1. — *Chazaliella letouzeyi* Robbrecht : A, habit; B, apex (reconstructed from herbarium material; from base onwards : pair of leaves, the proximal one cut away, pair of interpetiolar stipules, pair of young leaves, and terminal stipular cone); C, flower. (A, *Letouzey 9939*; B, *Reitsma 3406*; C, *Letouzey 10071*).

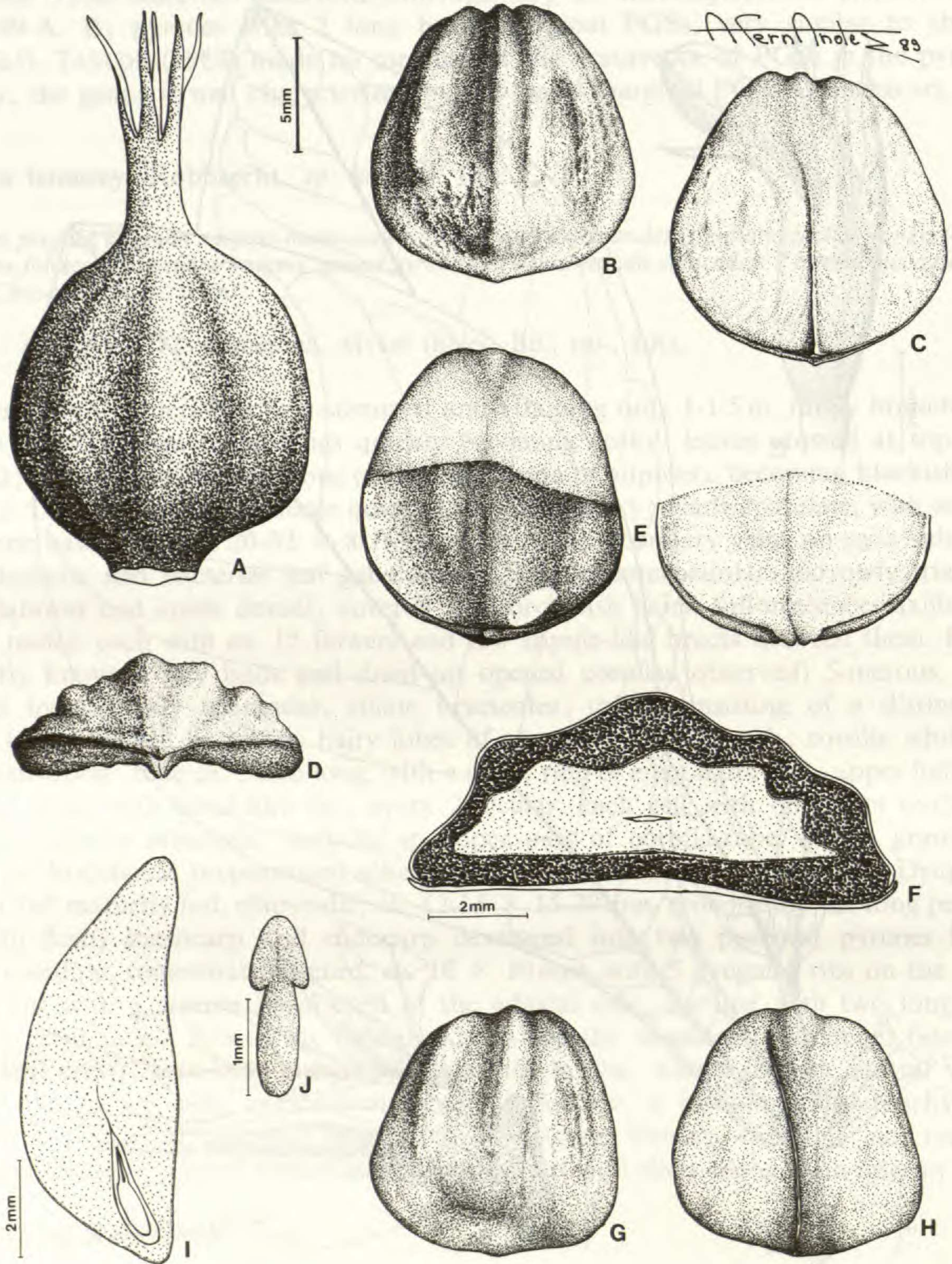


Fig. 2. — *Chazaliella letouzeyi* Robbrecht : A, fruit; B, abaxial, C, adaxial & D, basal view of pyrene; E, pyrene opened artificially (dotted line = rupture; seed removed) showing two marginal germination slits; F, cross-section of pyrene; G, abaxial & H, adaxial view of a seed; I, longitudinal section of a seed; J, embryo. (The bold scale line applies to all figures except F, I, J; *Letouzey 8212*).

d'Ebolowa sur piste d'Evindissi, *Letouzey 9939* (BR); Ngongondje Hill, near Ngom, on road Ebolowa-Ambam, *Koufani 182* (BR). — GABON : circonscription du Djoua, entre Macocou et Kambouia, *Le Testu 8884* (BR); ca. 15 km NE of Oveng, *J. M. & B. Reitsma 2228* (BR); Mont de Casque, ca. 20 km NW of Booué, *J. M. & B. Reitsma, C. Wilks & Th. Nzebi 3406* (WAG).

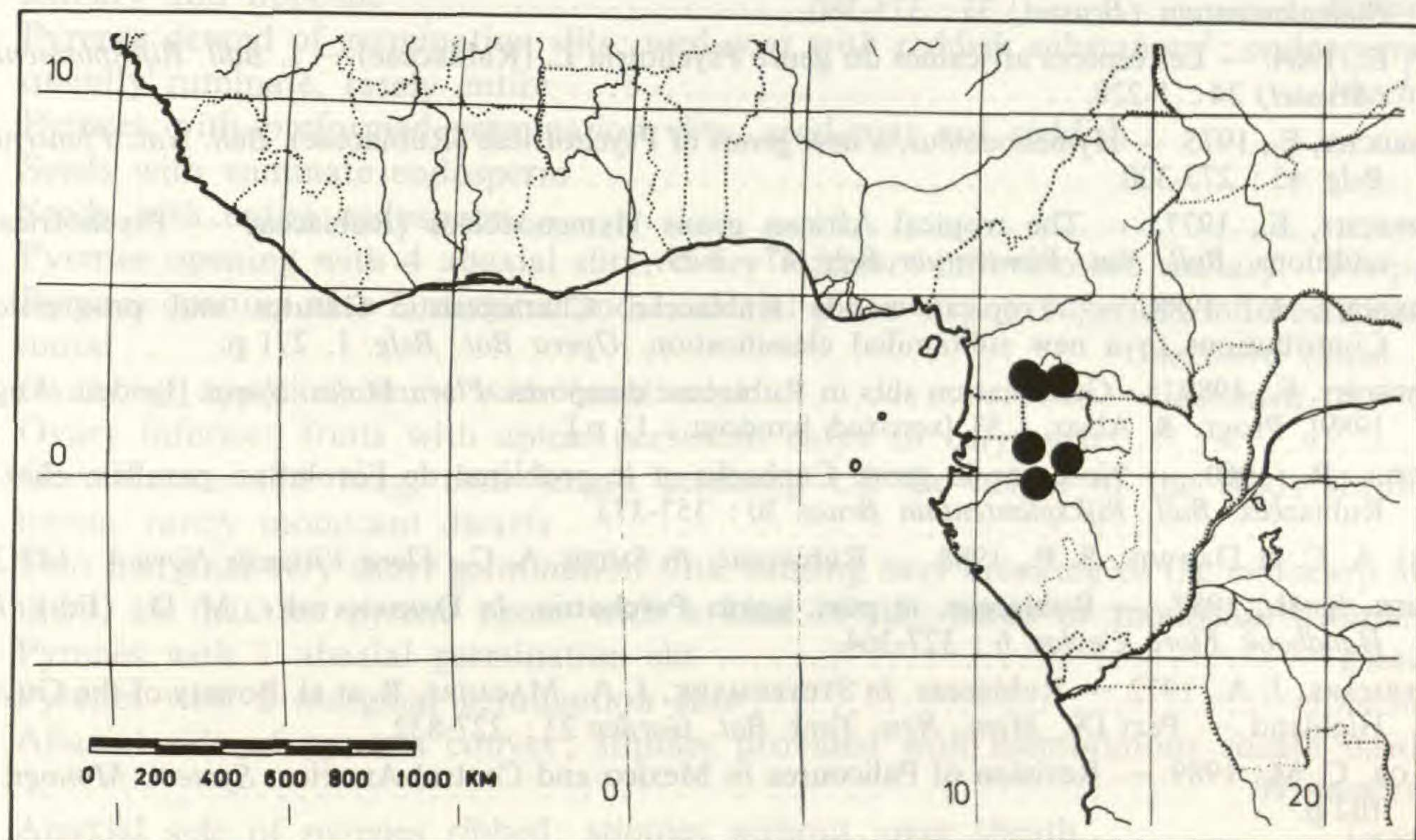


Fig. 3. — *Chazaliella letouzeyi* Robbrecht : distribution.

**AFFINITY :** It is difficult to indicate related species among the other *Chazaliella* (ca. 20 species keyed out in a synopsis by VERDCOURT, 1977). Most of them are shrubs with a quite different general habit, mainly because of the much smaller leaves and the pedunculate, branched inflorescences. In addition to the uncommon characters already mentioned in the foregoing paragraph 2, the spatulate leaves, larger than in any other *Chazaliella*, render *C. letouzeyi* distinct at first sight and exceptional in the genus. The only plausible candidate for a closer affinity seems to be *Chazaliella viridicalyx*, which also have sessile, densely congested (but terminal) inflorescences, well-developed foliaceous calyx-lobes, and rather large (but not spatulate), shortly petiolate leaves, and therefore was stated to be "quite unlike any other species of *Chazaliella*" (VERDCOURT, 1977 : 816). *C. viridicalyx*, however, occurring from S Cameroun to Cabinda, remains imperfectly known as its fruits have not yet been collected. Parallelism could well be the cause of the similar appearance of *C. viridicalyx*.

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APPENDIX

PETIT's key to the African genera of the *Psychotrieae*, *Triainolepideae* and *Morindeae*. Translated from French and adapted, inter alia taking into account PETIT 1963 and ROBBRECHT 1975.

1. Ovary with 2 collateral ovules in each locule; drupe with a single plurilocular stone; locules opening basally (*Triainolepideae*) ..... *Triainolepis*
- Ovary with a single ovule per locule; drupe with 1 two-locular stone or with (1-)2-many unilocular pyrenes ..... 2
2. Seeds with soft oily endosperm and embryo  $\pm$  as long as seeds (*Morindeae*) ... 3
- Seeds with horny, non-oily endosperm; embryo attaining 1/4-1/3 of seed height (*Psychotrieae*) ..... 6
3. Fruits fused into globose syncarps; pyrenes with two basal marginal slits. *Morinda*
- Fruits  $\pm$  solitary or in dense infructescences, but not fused ..... 4

4. Drupes with 1 two-locular stone up to 2 cm long, without apparent dehiscence . . . . . *Colletocema*  
 Drupes with 2-12 small pyrenes only a few mm long and with adaxial-basal lid. 5
5. Drupes with 2 pyrenes with  $\pm$  circular lid; inflorescences terminal<sup>1</sup>. *Trichostachys*  
 Drupes with 4-12 pyrenes opening with a  $\pm$  rectangular lid; inflorescences congested,  
 axillary and opposite . . . . . *Lasianthus*
6. Pyrenes devoid of germination slits; seed-coat with reddish substances<sup>2</sup>; endosperm fre-  
 quently ruminant, rarely entire . . . . . *Psychotria*  
 Pyrenes with preformed germination slits; seed-coat not reddish . . . . . 7
7. Seeds with ruminant endosperm . . . . . 8  
 Seeds with entire endosperm . . . . . 9
8. Pyrenes opening with 4 abaxial slits; ovary inferior; inflorescence axillary. *Peripeplus*  
 Pyrenes opening with 2 marginal and 1 adaxial slit; ovary  $\pm$  superior; inflorescences ter-  
 minal . . . . . *Gaertnera* (most spp.)
9. Ovary  $\pm$  superior; fruits with basal calyx . . . . . *Gaertnera* (few spp.)  
 Ovary inferior; fruits with apical persistent calyx or calyx-scar . . . . . 10
10. Germination slits long, their length attaining 1/2 the height of the seed; shrubs or  
 lianas, rarely monocaul dwarfs . . . . . 11  
 Two marginal very short germination slits, causing easy breaking of the endocarp above  
 them, so that the pyrene opens with a kind of lid; herbs or monocaul dwarfs. 12
11. Pyrenes with 1 abaxial germination slit . . . . . *Chasallia*  
 Pyrenes with 2 marginal germination slits . . . . . *Chazaliella*
12. Abaxial side of pyrenes convex; stipules provided with membranous sheath inside ..  
 . . . . . *Hymenocoleus*  
 Abaxial side of pyrenes ribbed; stipules without inner sheath . . . . . *Geophila*

1. Rarely (*Trichostachys* spp.) two pyrenes  $\pm$  fused into a single structure resembling the two-locular putamen of *Colletocema*; the distinction between these two genera is nowhere problematic, however, alone by habit and inflorescence position (*Colletocema* : shrubs with axillary opposite inflorescence; *Trichostachys* : monocaul dwarfs with terminal inflorescences).

2. Microscopic preparations of seed-coat embedded in Hoyer's gum turn reddish after a few days.





## Un nouveau *Striga* (*Scrophulariaceae*) de l'Ouest africain

A. RAYNAL-ROQUES

**Résumé :** Description de *Striga ellenbergeri*, proche de *S. aequinoctialis*, provenant du Mali méridional.

**Summary :** *Striga ellenbergeri*, from Southern Mali, is described; it is related to *S. aequinoctialis*.

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Au cours de la révision du matériel ouest-africain du genre *Striga*, un échantillon s'est révélé appartenir à une nouvelle espèce qu'il est malheureusement seul à représenter; dans l'attente, vaine, de découvrir de nouvelles récoltes conspécifiques, sa description a été retardée jusqu'à maintenant. Bien que cet unique spécimen, riche et en bon état, permette de mettre en évidence les caractères justifiant la distinction spécifique, il est regrettable que la variabilité morphologique ainsi que l'extension géographique de *S. ellenbergeri* nous échappent.

***Striga ellenbergeri* A. Raynal, sp. nov.**

— *Striga bilabiata* auct. non (THUNB.) KUNTZE : J.-P. LEBRUN in G. BOUDET & J. F. ELLENBERGER, Etude agrostologique du berceau de la race N'Dama dans le cercle de Yanfolila (République du Mali), I.E.M.V.T., Etude Agrostologique n° 30, 1971.

*Herba stirpe perenne caulibusque erectis annuis. Folia anguste linearia. Bractee angustae aequantes calycem 5,5-7 mm altum tubo 5-nervato lobisque subulatis. Corollae tubus calycis loborum coram apice prope mediam partem suam geniculatus. Capsula rostrata, 3-4 mm alta, calycis in tubo clausa.*

A *S. aequinoctiale* caulibus foliisque rugose pubescentibus, calyce duplo longiori, corollae tubo calycis loborum coram apice geniculato, praecipue differt.

TYPE : *Ellenberger 892*, Mali, Yanfolila, savane à néré (*Parkia biglobosa*), 17.11.1970 (holo-, P; iso-, ALF).

*Striga ellenbergeri* est une herbe vivace dont la souche contournée, en rhizome très court et ramifié, produit des tiges annuelles issues de l'aisselle de minuscules écailles; le rhizome et la base des tiges portent des racines adventives. La tige émet parfois des rameaux florifères issus des dernières aisselles foliaires, au-dessous de l'épi. Les feuilles, très étroites et souples, sont plus longues que les entrenœuds. Toute la plante, tige, feuilles, bractées, bractéoles et calices, porte une double pilosité : des poils fins et souples peu abondants et des poils blancs, raides, à base bulbeuse, surtout répartis sur les marges et les nervures.